

DØ Upgrade Monthly Progress Report

for the month of November, 2000

Subsystem: Master Schedule and Overview
WBS: All
Date Submitted: 1/15/01
Submitted By: Harry Weerts, Bill Freeman

<u>Done</u>	<u>Reportable Milestone</u>	<u>Date</u>	<u>Baseline</u>	<u>Variance</u>
X	M1-Solenoid Delivered to Fermilab	5/12/97	5/12/97	0 w
X	M2-Central Preshower Module Fabrication Complete	12/16/97	12/16/97	0 w
X	M2-Central Preshower Installed on Solenoid	5/21/98	5/21/98	0 w
X	M1-Solenoid Installed and Tested	9/30/98	9/30/98	0 w
X	M3-Level Ø-South Installed	5/8/00	2/9/00	12.6 w
X	M2-Muon End Toroids Installed on Platform	8/4/00	11/15/00	-14.2 w
X	M1-Begin Shield Wall Removal/Ready to Roll-in	11/7/00	11/22/00	-2.2 w
	M1-Detector Rolled-in and Hooked Up	2/22/01	2/2/01	2.8 w

Note: The full set of reportable milestones are collected and sorted by date at the end of this report. Also, a separate monthly report for the solenoid project will no longer be included, since that project is now formally complete. The reportable milestones associated with the solenoid project are now included in the above list.

Areas of Concern

Technical

The testing efforts at Fermilab and at the University Illinois, Chicago on the Level 2 trigger Alpha boards continue. No boards are working yet. Delivery of electronics for the trigger and the front-end systems remain a concern.

Schedule

See above.

Resources

None

Cost

None

Change Requests

None

Progress Summary

Progress on silicon was excellent this month. The SMT-S half was installed in the detector at DØ and the SMT-N was mechanically completed. Cabling of the SMT-N remains to be finished. Delivery of the last large board, the interface card, for the silicon DAQ system has started, and testing has begun at Kansas State University. The wall to the collision hall was partially removed, which allowed us to roll the 150-ton trusses, with the forward muon C-layer pixel and MDT planes mounted on them, into the collision. The completion of this task now allows the Beams Division to start putting the low beta quads into place.

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Subsystem: Silicon Tracker
WBS: 1.1.1
Date Submitted: 12/21/00
Submitted By: Marcel Demarteau, Ron Lipton

<u>Done</u>	<u>Reportable Milestone</u>	<u>Date</u>	<u>Baseline</u>	<u>Variance</u>
X	H Half-Wedge Fabrication 20% Complete	10/15/99	10/15/99	0 w
X	3 Chip Ladder Fabrication 80% Complete	10/26/99	10/20/99	0.6 w
X	9 Chip Ladder Fabrication 20% Complete	11/4/99	11/3/99	0.2 w
X	F Wedge Assemblies 20% Complete	1/24/00	1/19/00	0.4 w
X	6 Chip Ladder Fabrication 20% Complete	1/31/00	1/3/00	3.9 w
X	H Half-Wedge Fabrication 80% Complete	3/29/00	2/23/00	5 w
X	6 Chip Ladder Fabrication 80% Complete	7/12/00	3/14/00	16.8 w
X	Low Mass Cables Available For Silicon South	7/17/00	NA	0 w
X	9 Chip Ladder Fabrication 80% Complete	7/31/00	3/27/00	17.4 w
X	F Wedge Assemblies 80% Complete	7/31/00	4/26/00	13.2 w
X	Low Mass Cables Available for Silicon North	9/4/00	NA	0 w
X	M2-First Silicon Tracker Barrel/Disk Module Complete	9/14/00	1/24/00	33 w
X	South H-Disks Ready to Move to DAB	10/13/00	7/3/00	14.4 w
X	South Half-Cylinder Complete and Ready to Move to DAB	10/25/00	8/1/00	12.2 w
X	M3-All Silicon Tracker Barrels/Disks Complete	11/22/00	8/25/00	12.6 w
X	North Half-Cylinder Complete and Ready to Move to DAB	12/12/00	9/18/00	12 w
X	M1-Central Silicon Complete	12/12/00	9/18/00	12 w
	M2-Silicon Tracker Installed in Solenoid/Fiber Tracker	1/4/01	9/25/00	13.6 w

Areas of Concern

Technical

The 10% test has proven very valuable in understanding the details of operation of a large system. A reset scheme was implemented that avoids observed periodic jumps in device pedestals in sparse scan mode.

Schedule

All detector assemblies will be delivered on schedule. Final cabling and checkout will be limited by the availability of interface cards, power supplies, and the associated infrastructure.

Resources

None

Cost

There is some cost exposure in interface card and power supply production and testing. There is also some exposure in the HV bias system.

Change Requests

None

Progress Summary

Progress this month has been substantial and indicates that the detectors will be delivered to DØ on schedule.

10% Test Activities

- A full test of a disk/barrel module including zero-suppressed running and exercise of the full data acquisition system.
- Collection of cosmic ray data using a full barrel/disk module for initial calibration and alignment studies.
- System tests at -10 degrees C

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- Studies of pedestal stability as a function of device settings and control signals
- Installation and initial studies of an H-disk with the final version of the interface cards

Final Assembly of SMT

- SMT-S was successfully installed in the detector.
- All barrel/disk modules were installed in the North half-cylinder, manifolds were installed and leak checked, and covers were installed.
- Cabling on SMT-N was begun at the end of the month
- Assembly of H-disks was completed

Electronics

- Deliveries of final interface boards began at the rate of fifteen per week. Boards were tested at Kansas State and ~20 are now available for installation at DAB. Six boards were installed in the 10% test.
- Adapter cards were delivered and will be stuffed and tested in December.
- Vicor power supplies are due in December, and their availability will be the determining factor in electronics commissioning.
- All low-mass cables are in hand and tested.

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Subsystem: Fiber Tracker and VLPCs
WBS: 1.1.2
Date Submitted: 1/2/01
Submitted By: Alan D. Bross

<u>Done</u>	<u>Reportable Milestone</u>	<u>Date</u>	<u>Baseline</u>	<u>Variance</u>
	<i>Detector</i>			
X	M2 - Assembly Design Complete	3/5/99	3/5/99	0 w
X	M2-First Cylinder Complete	9/2/99	9/2/99	0 w
X	M3-Fiber Tracker Ribbon Fabrication 50% Complete	11/5/99	11/12/99	-0.9 w
X	M2-Fiber Tracker Assembly Begun	2/1/00	12/6/99	6.2 w
X	M3-Fiber Tracker Cylinders 8, 7, 6, and 5 Complete	3/2/00	1/28/00	5 w
X	M3-Fiber Tracker Ribbon Fabrication Complete	5/10/00	3/6/00	9.5 w
X	M3-Fiber Tracker Ribbon Mounting Complete	5/13/00	4/20/00	3.3 w
X	M2-Fiber Tracker Assembly Complete	5/26/00	5/4/00	3.3 w
X	Waveguide Production 50% Complete	7/24/00	1/29/00	24.6 w
X	M3-Waveguide Production Complete	11/7/00	6/5/00	22 w
	<i>VLPCs</i>			
X	M2-VLPC Production 50% Complete	8/31/97	8/31/97	0 w
X	M3-VLPC Cryo System Operational	8/18/00	6/12/00	9.6 w
X	M3-VLPC Cassette Assembly 50% Complete	9/13/00	4/12/00	21.5 w
	M3-VLPC Cassette Assembly Complete	2/12/01	8/22/00	23.4 w

Areas of Concern

Technical

None

Schedule

None

Resources

None

Cost

None

Change Requests

None

Progress Summary

- 75 VLPC cassettes fabricated
- 52 VLPC Cassettes ready for installation at DØ
- Waveguide installation complete (axial + stereo) [Note: Not yet connected to cassettes.]

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Subsystem: Forward Preshower
WBS: 1.1.4
Date Submitted: 12/18/00
Submitted By: Abid Patwa

<u>Done</u>	<u>Reportable Milestone</u>	<u>Date</u>	<u>Baseline</u>	<u>Variance</u>
X	M2-Forward Preshower Module Fabrication Begun	11/4/98	11/4/98	0 w
X	M3-1st Forward Preshower Detector Complete	2/24/00	1/12/00	6.2 w
X	Module Fabrication and Testing Complete	4/1/00	12/10/99	14 w
X	M3-2nd Forward Preshower Detector Complete	4/3/00	3/8/00	3.6 w

Areas of Concern

Technical

None

Schedule

Although waveguide production for the FPS continues, completion of all required cables awaits delivery of an additional supply of clear fibers, expected in early January 2001. This causes the installation of all FPS waveguides on the cryostat heads to begin later than anticipated.

Resources

None

Cost

None

Change Requests

None

Progress Summary

- Final fiber lengths for all FPS clear waveguides about the EC face to the VLPC cassettes were established.
- Waveguide production continued at Notre Dame and Indiana University, with fibers for approximately 90% of the cables that will occupy the FPS shower layers 1 and 2 pulled. The remaining forward MIP-detecting layers (3 and 4) require an additional supply of fiber mentioned above.
- Final VLPC warm-end connector assemblies are being installed on the completed waveguides at Indiana University, following the FPS mapping logic.
- The full delivery of twisted-pair ribbon cables controlling the LEDs located within the FPS was received with custom electrical connectors installed on each.
- Technical issues for routing the electrical LED pulser cables about the EC head and through the calorimeter's cable winder were addressed. The limited space available within the winder requires grouping with the remaining ICD and Level Ø-Luminosity Counter cables, which are all routed in a similar manner. The joint installation has been scheduled to begin in early January 2001.

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Subsystem: Tracking Electronics
WBS: 1.1.5
Date Submitted: 12/21/00
Submitted By: Marvin Johnson, Fred Borcharding

<u>Done</u>	<u>Reportable Milestone</u>	<u>Date</u>	<u>Baseline</u>	<u>Variance</u>
X	First Readout Crate Installed & Working	11/16/99	12/2/99	-2 w
X	10 Digital Boards Available	7/28/00	3/22/00	18 w
X	Ten 8-chip Analog Boards Available	8/8/00	4/19/00	15.4 w
	Multichip Modules Received	1/30/01	2/23/00	47 w
	Mixer Boards Ready	1/31/01	6/22/00	30.2 w

Areas of Concern

Technical

None

Schedule

Delays in the analog front-end boards make it unlikely that all will all be installed by March 1.

Resources

None

Cost

None

Change Requests

Progress Summary

Silicon

Cables are nearly complete for the southeast quadrant. One of the two crates is in and powered. The second crate will be installed in a week. Interface cards for the southeast quadrant are ready to install. Manufacturing of interface cards will be complete by the end of December. All of the south sequencer and VRB systems are complete and work is starting on the north.

We need to check out about 2/3 of the remaining interface cards (100 modules), check out the remaining sequencer controllers (six modules), install the cables, crates and power supplies in the remaining three quadrants. The power supplies for the north half have not yet arrived. They are due in January.

Fiber Tracker

All the multichip modules should be built by the end of December. Over half are already at FNAL. So far, the failure rate is running about 13%. Most of these can be repaired either at the manufacturer or at Fermilab. We purchased 20% spares so the failure rate is not a problem for building the modules for the detector. The analog front-end board appears to meet the noise spec (seven femto-Coulomb threshold) for the discriminator. Noise measurements are in progress for the digitizer portion (SVX II). PC boards have been built but the company is having difficulty testing them. We hope that this will be complete by January 1 so that board assembly can start. It is not likely that all boards will be installed by March 1.

Most of the cabling and rack preparation have been completed. The rest should be done by Jan 1.

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Prototype mixer boards are under construction. Testing should start in early January. Only twenty of these need to be built, so it still appears that they will be ready for the detector roll-in.

The status of the rest of the digital system has not changed much from last month. Boards are on order and the vendor has slipped a month. Current delivery schedule is for the end of December. This is still not a problem but any further delays will mean that the system will not be installed by March 1.

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Subsystem: Calorimeter Electronics
WBS: 1.2.1
Date Submitted: 12/15/00
Submitted By: Mike Tuts

<u>Done</u>	<u>Reportable Milestone</u>	<u>Date</u>	<u>Baseline</u>	<u>Variance</u>
X	SCA Testing Complete	11/23/99	12/15/99	-2.8 w
X	Shaper Hybrid 50% Complete	2/22/00	5/9/00	-11 w
X	M2-Calorimeter Preamp System Test Complete	7/13/00	3/31/00	14.4 w
X	Daughterboard Vendor Production Complete	12/7/00	6/16/00	24 w
	Timing System Installed	12/13/00	8/18/00	16 w
	M3-Calorimeter CC,ECN Preamp Installation Complete	12/19/00	3/31/00	36.4 w
	BLS Motherboard Assembly Complete	1/29/01	8/7/00	23.6 w
	M2-Calorimeter BLS Assembly Complete	2/5/01	9/26/00	17.6 w

Areas of Concern

Technical

None

Schedule

The CC and ECN preamp installation is well underway, but will likely miss the 12/19 milestone date. It should not be delayed by more than 2 to 3 weeks. There is an issue of both manpower and access that makes estimating difficult. The timing system has sufficient first articles for the present needs, but will not be fully installed until January or February.

Resources

We estimate twenty person-weeks of work to prepare the preamp infrastructure on the calorimeter and to complete the construction of the BLS power supplies. We have requested another FTE electro-mechanical tech to assure the timely completion of those tasks.

The other area of concern is the manpower to test the BLS cards (daughterboards and motherboards) at Stony Brook. We are attempting to use shifters for that task, but have not yet realized all the promised help. If that mismatch continues, this will be a problem.

Cost

We have the opportunity to purchase fifteen surplus wafers of the custom SCA chip from the vendor, Supertex. We are presently studying whether it would be prudent to purchase those devices at a discounted price. If we do not make the purchase soon, those devices will be destroyed. The cost risk is at most \$25,000.

Change Requests

None

Progress Summary

- Daughterboard vendor production was completed on 12/7/00, meeting that reportable milestone.
- Twenty of of thirty-six BLS power supplies have been constructed.
- 2220 of 5000 BLS daughterboards have been assembled.
- 679 of 1250 BLS motherboards have been assembled.
- The pulser system has been installed, and the controller is under construction
- The calorimeter HV has been completed for the CC and ECN and turned on. The ECS HV has been tested but not connected to the calorimeter since the ECS has not been filled.
- Significant progress has been made on the online tools and software in preparation for commissioning.

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Subsystem: Intercryostat Detector
WBS: 1.2.2
Date Submitted: 12/20/00
Submitted By: Andy White, Lee Sawyer

<u>Done</u>	<u>Reportable Milestone</u>	<u>Date</u>	<u>Baseline</u>	<u>Variance</u>
X	M3-ICD Tile Modules/Boxes Ready	4/19/00	1/18/00	13.2 w
X	M2-ICD Modules Arrive at Fermilab	4/24/00	1/25/00	12.8 w
X	M3-InterCryostat Detectors Installed	5/5/00	2/1/00	13.6 w
	Drawers Ready	12/20/00	12/14/99	50.2 w

Areas of Concern

Technical

- Still need a scheme for the fiber cable routing on the ECs.
- Need to modify the HV fanout boxes in MCH to allow adjustment on channel 1.

Schedule

- The second pair of crates will be delivered to Fermilab in early December.
- The second test stand, for ICD module MIP calibration, will be assembled at Fermilab in December.

Resources

We will need support (welder/tech) to install links for the fiber cables on the faces of the ECs.

Cost

None

Change Requests

We will be requesting an extension of the end date of our present MOU's (UTA and LaTech) through June 30, 2001

Progress Summary

- A prototype fiber cable was received from Probit Electronics and successfully tested at UTA.
- A complete cosmic-ray test of the ICD system was carried out from the tile module through the fiber cable, electronics drawer. Results were consistent with expectations based on the Run I system and the changes made for Run II.
- The electronics drawers are in the final stages of assembly at Louisiana Tech.
- The remainder (30%) of the short SHV cables were made at UTA.
- The ICD HV pods were tested.

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Subsystem: Muon Central
WBS: 1.3.2
Date Submitted: 12/1/00
Submitted By: Tom Diehl

<u>Done</u>	<u>Reportable Milestone</u>	<u>Date</u>	<u>Baseline</u>	<u>Variance</u>
	CFA Commissioning Complete	2/15/01	7/10/00	30.3 w
	PDT Commissioning Complete	2/20/01	6/9/00	34.8 w

Areas of Concern

Technical

None

Schedule

- The completion of the PDT gas system continues to drive the central muon system completion date.
- The A- ϕ system commissioning is still on hold because of a lack of physicists.

Resources

During November there were only 3.25 FTE physicists commissioning the three systems that make up the central muon detector. A post-doc is badly needed whose primary job will be to commission the scintillation counters.

Cost

None

Change Requests

None

Progress Summary

Except for the PDT gas system, the detector infrastructure is nearly finished.

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Subsystem: Muon Forward Trigger Detectors
WBS: 1.3.3
Date Submitted: 12/16/00
Submitted By: Dmitri Denisov

<u>Done</u>	<u>Reportable Milestone</u>	<u>Date</u>	<u>Baseline</u>	<u>Variance</u>
X	M2-Muon Forward Trigger Counter Assembly 10% Complete	10/12/98	10/12/98	0 w
X	All Pixel Octants Assembled	2/23/00	4/4/00	-5.8 w
	All Muon Forward Trigger Detector Planes Installed	1/15/01	8/25/00	18.8 w

Areas of Concern

Technical

None

Schedule

Installation of B-layer planes is on the critical path for roll-in.

Resources

Commissioning of installed octants is progressing slower than expected. An increase in the number of physicists and electronics engineers working on the project is needed in order to be ready for efficient data collection at the beginning of Run II.

Cost

None

Change Requests

A set of minor changes (within \$1k) was submitted for the November Lehman mini-review in order to close completed WBS items.

Progress Summary

- C-layer octants were mounted on the EMC trusses and the trusses were installed in the collision hall.
- Design of all mounting hardware for the B-layers was finished, and parts orders were placed with delivery dates in early December 2000. Assembly of the North B-layer plane on the shield wall began.
- Cabling of the A-layer octants was finished and the eight north A-layer octants have been readout via the DØ DAQ.
- HV and signal cabling of the sixteen C-layer octants was completed, the front-end VME crates were installed, and connections to the DØ DAQ began. Measurements of noise on the input of front-end boards demonstrate that in the current detector configuration, noise is below 1mV, which is well within specifications.
- Cosmic-ray spectra collected for A-layer counters demonstrate shape in full agreement with cosmic-ray flux predictions.

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Subsystem: Muon Forward Tracker
WBS: 1.3.4
Date Submitted: 12/16/00
Submitted By: Dmitri Denisov

<u>Done</u>	<u>Reportable Milestone</u>	<u>Date</u>	<u>Baseline</u>	<u>Variance</u>
X	M2-Muon Forward Tracker MDT Assembly 10% Complete	1/29/99	1/29/99	0 w
X	Arrival Of C-Layer MDT Modules At FNAL	11/3/99	10/22/99	1.7 w
X	M2-All Muon Forward Tracker MDT Modules At Fermilab	3/30/00	3/10/00	2.8 w
X	B-Layer Octants Assembled	8/24/00	4/18/00	18 w
X	All MDT Octants Assembled	8/24/00	7/14/00	5.8 w
X	Muon Forward Tracker B-Layer Planes Installed	12/22/00	6/15/00	26.2 w
X	All MDT Planes Installed	12/22/00	8/4/00	19.2 w

Areas of Concern

Technical

None

Schedule

None

Resources

The large number of commissioning tasks that have to be performed on a short time scale before roll in require the full-time presence of experienced physicists and electronics engineers at Fermilab. Currently commissioning is progressing slower than expected due to lack of personnel.

Cost

None

Change Requests

A set of minor (within ~\$1k) change requests was submitted for the November Lehman mini-review in order to close finished WBS items.

Progress Summary

- Installation of the C-layer MDTs on the EMC trusses was finished and the trusses were rolled into the collision hall.
- Cabling of 16 C-layer octants began, along with gas system and HV system tests.
- All parts for installation of the B-layers have been procured and delivered to Fermilab. Installation of B-layer octants is starting.
- Final single-pass gas system was assembled, tested, and used for commissioning of North A-layer detectors. Measured octant gas leaks were within specifications.
- Cosmic-ray spectra are in agreement with predictions for cosmic-ray fluxes.

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for the month of November, 2000

Subsystem: Muon Electronics
WBS: 1.3.5
Date Submitted: 1/2/01
Submitted By: Bill Freeman

<u>Done</u>	<u>Reportable Milestone</u>	<u>Date</u>	<u>Baseline</u>	<u>Variance</u>
X	MDT ADB Fabrication Complete	12/2/99	12/2/99	0 w
X	MDC Fabrication Complete	1/31/00	12/13/99	5 w
X	M2-Muon Electronics Preproduction Installation Complete	1/31/00	12/13/99	5 w
X	FEB, CB Production Complete	4/10/00	1/3/00	14 w
X	SFE, SRC Fabrication Complete	9/21/00	2/3/00	32.5 w
X	MRC, MFC Production Complete	10/18/00	3/27/00	28.8 w

Areas of Concern

Technical
None

Schedule
None

Resources
None

Cost
None

Change Requests
None

Progress Summary
The muon electronics project is complete.

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Subsystem: Trigger
WBS: 1.4.1-1.4.5
Date Submitted: 12/21/00
Submitted By: Gerald C. Blazey

<u>Done</u>	<u>Reportable Milestone</u>	<u>Date</u>	<u>Baseline</u>	<u>Variance</u>
X	SLICs Received	12/10/99	11/10/99	4 w
X	M3-Establish Single Crate Internal Data Movement	2/17/00	1/6/00	6 w
X	Preproduction MTCxx, MTFB, and MTCM Complete	10/19/00	1/24/00	38 w
X	M3-Muon Level 1 Trigger Preproduction Testing Complete	11/8/00	4/18/00	28.6 w
	MBTs Received	11/30/00	3/16/00	36 w
	M3- Cal Readout Available to L2	12/13/00	2/11/00	42.6 w
	M3-L3 Operational (One Full Chain)	1/2/01	6/1/00	29 w
	Production MTCxx, MTFB, and MTCM Complete	2/2/01	6/27/00	30 w
	Global Installation Complete	3/2/01	7/12/00	32 w
	L2 Cal Installation Complete	3/2/01	8/21/00	26.4 w
	Alpha Cards Received	3/30/01	5/15/00	44 w
	L2 Muon Installation Complete	4/27/01	7/26/00	38 w
	L2 CTT Installation Complete	4/27/01	8/9/00	36 w
	M3-Trigger Level 2 Commissioned	6/4/01	9/21/00	35 w

Areas of Concern

Technical

A fully functional Level 2 Alpha production board is not yet available. Diagnosis of production difficulties has not been completed. This delays production of a second set of cards.

Schedule

- The unavailability of Level 2 Alpha cards continues to delay commissioning of the full system, and there is no estimated completion date.
- Production of Level 3 hardware components continues. The earliest arrival of sufficient hardware to increase bandwidth is early February.

Resources

The trigger database effort is seriously understaffed, particularly with respect to interface design and implementation.

Cost

None

Change Requests

None

Progress Summary

Framework

Operational support of the framework during detector commissioning continued.

Luminosity Monitor

The luminosity monitor cables were procured and design of power distribution and NIM logic began.

Level 1

- Work on Level 1C AL began in earnest with a first look at trigger pickoff signals and discussions of resistor values.

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- Progress was made on the production and testing of Level 1 muon cards: MTCM testing continued, MTCxx and MTM cards were submitted for assembly, layout of production MTC10 MTFB was completed, test of MTC05 MTFB continued, preproduction MCCM boards were sent for fabrication, and testing of preproduction MCEN cards completed. Progress was also made integrating the Level 1 muon into the DAQ system and on the simulation.
- Testing continued on the first pre-production Level 1 CTT/CPS AFE8 boards. AFE8 production was placed on hold until testing is completed.
- Work on the AFE12 layout and the Mixer Box continued.
- The DFE daughter board delivery has been delayed. Assembly of the doublewide daughters has begun. Significant progress on the VHDL coding of the DFE, collectors, and broadcasters was made.
- Crate installation continued.

Level 2

- Debugging of the Level 2 Alphas continues at both UIC and the CD. Two boards reached the level of passing boot-up tests. Actions with respect to the poor quality of the production alphas included a site visit and delivery of broken components to source vendors.
- Fifteen of the MBTs were delivered and testing commenced. The remaining five have been delayed in manufacture.
- Prototyping of CIC/SFO continued, as did evaluation of the FICs at SACLAY.
- Significant progress was made in the areas of online operating software, trigger algorithms, and simulation. In particular, SLIC code and simulation was reorganized.
- Cable and rack installation was nearly completed.

Level 3

- The Level 3/DAQ system continued to support commissioning.
- Progress continued on the layout and design of the SIB and VRBI.
- A meeting was held at Brown to discuss the delivery schedule for the hardware components and procurement of parts.

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Subsystem: Online
WBS: 1.5.1
Date Submitted: No report received this month
Submitted By: --

<u>Done</u>	<u>Reportable Milestone</u>	<u>Date</u>	<u>Baseline</u>	<u>Variance</u>
X	Steady DAQ Running	3/17/00	3/31/00	-2 w

Areas of Concern

Technical

Schedule

Personnel

Cost

Change Requests

Progress Summary

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November '00 Financial Summary

The second month of fiscal year 2001 closed with obligations for the DØ Upgrade Project totaling \$831K on equipment M&S funds. While a month-to-month Project spending plan has not been established, in order to meet completion deadlines, the majority of FY01 equipment funds are expected to be obligated in the first half of the fiscal year. During November, the continuing resolution, which was in place at the beginning of the fiscal year, was lifted and the Project was allocated an FY01 M&S budget of \$3,421K.

The M&S Upgrade Project balance is currently \$2,769K, excluding contributions and contingency. Contributions to the Upgrade currently total \$1,442K. These contributions reduce the M&S balance. DØ Upgrade Spokespersons have been negotiating additional contributions of approximately \$385K, but at this time, not all the funds have been specified. Because the Project managers routinely re-evaluate funding needs, the Estimate to Complete (ETC) continues to be synonymous with the Project's M&S balance. The overall cost of the Project has increased. The contingency, which is held by the Directorate, further increases the total Project cost. The total Cost Estimate increased by an additional \$199K during November as a result of a contingency usage request approved by the Directorate. Additional contingency requests are expected to be presented in early FY01.

The Project currently has commitments with universities and other institutions in the DØ Collaboration, via active Memoranda of Understanding (MoU), totaling \$5,435K. These funds represent an obligation on the part of the DØ Upgrade Project and are regularly costed each month via invoices received from these institutions as work is completed. In addition, several institutions have made significant contributions to the DØ Upgrade. A list of the institutions involved, as well as a more detailed breakdown of the commitments and costs, follows.

DØ Upgrade Monthly Progress Report

for the month of November, 2000

FY01 Financial Report as of 11/30/00

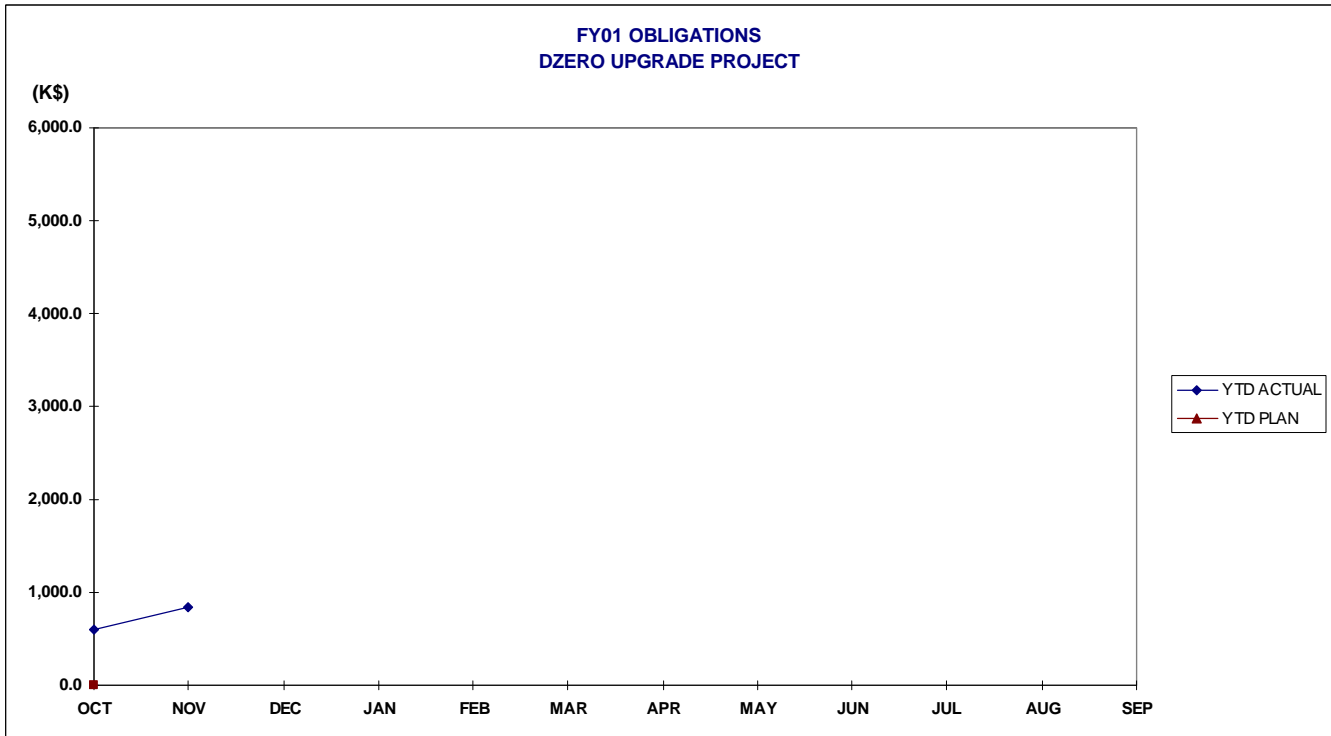
	<u>COST ESTIMATE</u>	<u>PRIOR YR OBLIG</u>	<u>FY 01 YTD OBLIG</u>	<u>PROJECT BALANCE</u>
1 TOTAL DZERO UPGRADE PROJECT	42,374.9	38,774.3	831.3	2,769.3
1.1 TRACKING DETECTORS	20,669.4	19,795.1	482.7	391.6
1.1.1 SILICON TRACKER	8,243.6	7,924.0	222.1	97.5
1.1.2 FIBER TRACKER	7,851.4	7,697.6	102.4	51.4
1.1.3 CENTRAL PRESHOWER DETECTOR	228.7	228.7	0.5	-0.5
1.1.4 FORWARD PRESHOWER DETECTOR	514.9	514.9	0.0	0.0
1.1.5 TRACKING ELECTRONICS	3,830.8	3,429.8	157.8	243.2
1.2 CALORIMETER	4,711.6	4,489.2	0.2	222.2
1.2.1 FRONT-END ELECTRONICS	4,402.6	4,180.2	0.2	222.2
1.2.2 INTERCRYOSTAT DETECTOR	309.0	309.0	0.0	0.0
1.3 MUON DETECTORS	9,493.1	8,568.2	134.5	790.4
1.3.1 COSMIC RAY SCINTILLATOR	1,223.2	963.2	0.0	260.0
1.3.2 CENTRAL TRIGGER DETECTORS	951.9	793.2	15.7	143.1
1.3.3 FORWARD TRIGGER DETECTOR	2,133.3	1,766.8	69.4	297.1
1.3.4 FORWARD TRACKING DETECTOR	1,410.8	1,297.2	23.3	90.2
1.3.5 FRONT-END ELECTRONICS	3,773.9	3,747.8	26.1	0.0
1.4 TRIGGER	6,672.7	5,276.9	181.1	1,214.7
1.4.1 FRAMEWORK	1,859.4	1,859.4	0.0	0.0
1.4.2 LEVEL 0	136.4	130.6	2.2	3.6
1.4.3 LEVEL 1	1,588.2	1,356.0	0.0	232.2
1.4.4 LEVEL 2	2,039.8	1,104.5	178.9	756.4
1.4.5 LEVEL 3	1,049.0	826.5	0.0	222.6
1.5 ONLINE EQUIPMENT	828.0	644.9	32.7	150.3
1.5.1 ON-LINE EQUIPMENT	828.0	644.9	32.7	150.3

DEFINITION OF TERMS:

Funds: DØ Upgrade = M&S Equipment Funds; Solenoid = AIP Plant Funds.
 Cost Estimate: Total Project and Sub-Project estimates without contingency.
 Prior Year Obligations: Obligations for fiscal years '92 through '00 as applicable.
 FY 01 Year-to-Date Obligations: Obligations for fiscal year '01.
 Project Balance: Cost Estimate - (Prior Year Obligations + Fiscal 01 YTD Obligations)

DØ Upgrade Monthly Progress Report

for the month of November, 2000



	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
YTD ACTUAL	597.4	831.3										
YTD PLAN												

DØ Upgrade Monthly Progress Report

for the month of November, 2000

Active MOUs as of 11/30/00

<u>INSTITUTION</u>	<u>EQUIPMENT</u>	<u>R&D</u>	<u>COSTED</u>
Boston University	298,200	5,200	82,107
Brown University	820,076	106,000	211,319
California State University, Fresno	26,160		17,452
Indiana University	65,000		60,082
Institute for High Energy Physics (IHEP)	270,433		168,313
Kansas State University	113,300	92,512	138,603
Louisiana Tech University	98,856		60,822
Michigan State University	384,238	176,000	83,872
Northern Illinois University	133,000	28,000	141,000
SUNY at Stony Brook	1,273,567	20,000	613,135
University of Arizona	790,598	26,600	503,955
University of IL, Chicago	129,103	22,000	91,042
University of Kansas, Center for Research, Inc.	16,000		12,568
University of Notre Dame	68,000	199,500	273,972
University of Oklahoma	43,000		36,896
University of Texas, Arlington	162,886		120,481
<u>University of Washington</u>	<u>60,188</u>	<u>6,200</u>	<u>66,388</u>
Total Fermilab Funds:	<u>\$4,752,605</u>	<u>\$682,012</u>	
Total Costed:	2,359,728	322,280	<u>\$2,682,008</u>
Total Open Commitments:	<u>\$2,392,877</u>	<u>\$359,732</u>	82,107

DØ Upgrade Monthly Progress Report

for the month of November, 2000

Reportable Milestones Summary

<u>Done</u>	<u>Reportable Milestones</u>	<u>Project</u>	<u>Date</u>	<u>Baseline</u>	<u>Var.</u>
X	M1-Solenoid Delivered to Fermilab	Solenoid	5/12/97	5/12/97	0 w
X	M2-VLPC Production 50% Complete	VLPCs	8/31/97	8/31/97	0 w
X	M2-Central Preshower Module Fabrication Complete	Central Preshower	12/16/97	12/16/97	0 w
X	M2-Central Preshower Installed on Solenoid	Central Preshower	5/21/98	5/21/98	0 w
X	M1-Solenoid Installed and Tested	Solenoid	9/30/98	9/30/98	0 w
X	M2-Muon Forward Trigger Counter Assembly 10% Complete	Muon Forward Trigger	10/12/98	10/12/98	0 w
X	M2-Forward Preshower Module Fabrication Begun	Forward Preshower	11/4/98	11/4/98	0 w
X	M2-Muon Forward Tracker MDT Assembly 10% Complete	Muon Forward Tracker	1/29/99	1/29/99	0 w
X	M2 - Assembly Design Complete	Fiber Tracker	3/5/99	3/5/99	0 w
X	M2-First Cylinder Complete	Fiber Tracker	9/2/99	9/2/99	0 w
X	H Half-Wedge Fabrication 20% Complete	Silicon Tracker	10/15/99	10/15/99	0 w
X	3 Chip Ladder Fabrication 80% Complete	Silicon Tracker	10/26/99	10/20/99	0.6 w
X	Arrival Of C-Layer MDT Modules At FNAL	Muon Forward Tracker	11/3/99	10/22/99	1.7 w
X	9 Chip Ladder Fabrication 20% Complete	Silicon Tracker	11/4/99	11/3/99	0.2 w
X	M3-Fiber Tracker Ribbon Fabrication 50% Complete	Fiber Tracker	11/5/99	11/12/99	-0.9 w
X	First Readout Crate Installed & Working	Silicon Electronics	11/16/99	12/2/99	-2 w
X	SCA Testing Complete	Calorimeter Electronics	11/23/99	12/15/99	-2.8 w
X	MDT ADB Fabrication Complete	Muon Electronics	12/2/99	12/2/99	0 w
X	SLICs Received	Trigger	12/10/99	11/10/99	4 w
X	F Wedge Assemblies 20% Complete	Silicon Tracker	1/24/00	1/19/00	0.4 w
X	6 Chip Ladder Fabrication 20% Complete	Silicon Tracker	1/31/00	1/3/00	3.9 w
X	MDC Fabrication Complete	Muon Electronics	1/31/00	12/13/99	5 w
X	M2-Muon Electronics Preproduction Installation Complete	Muon Electronics	1/31/00	12/13/99	5 w
X	M2-Fiber Tracker Assembly Begun	Fiber Tracker	2/1/00	12/6/99	6.2 w
X	M3-Establish Single Crate Internal Data Movement	Trigger	2/17/00	1/6/00	6 w
X	Shaper Hybrid 50% Complete	Calorimeter Electronics	2/22/00	5/9/00	-11 w
X	All Pixel Octants Assembled	Muon Forward Trigger	2/23/00	4/4/00	-5.8 w
X	M3-1st Forward Preshower Detector Complete	Forward Preshower	2/24/00	1/12/00	6.2 w
X	M3-Fiber Tracker Cylinders 8, 7, 6, and 5 Complete	Fiber Tracker	3/2/00	1/28/00	5 w
X	Steady DAQ Running	Online	3/17/00	3/31/00	-2 w
X	H Half-Wedge Fabrication 80% Complete	Silicon Tracker	3/29/00	2/23/00	5 w
X	M2-All Muon Forward Tracker MDT Modules At Fermilab	Muon Forward Tracker	3/30/00	3/10/00	2.8 w
X	Module Fabrication and Testing Complete	Forward Preshower	4/1/00	12/10/99	14 w
X	M3-2nd Forward Preshower Detector Complete	Forward Preshower	4/3/00	3/8/00	3.6 w
X	FEB, CB Production Complete	Muon Electronics	4/10/00	1/3/00	14 w
X	M3-ICD Tile Modules/Boxes Ready	Intercryostat Detector	4/19/00	1/18/00	13.2 w
X	M2-ICD Modules Arrive at Fermilab	Intercryostat Detector	4/24/00	1/25/00	12.8 w
X	M3-InterCryostat Detectors Installed	Intercryostat Detector	5/5/00	2/1/00	13.6 w
X	M3-Level Ø-South Installed	Luminosity Monitor	5/8/00	2/9/00	12.6 w
X	M3-Fiber Tracker Ribbon Fabrication Complete	Fiber Tracker	5/10/00	3/6/00	9.5 w
X	M3-Fiber Tracker Ribbon Mounting Complete	Fiber Tracker	5/13/00	4/20/00	3.3 w
X	M2-Fiber Tracker Assembly Complete	Fiber Tracker	5/26/00	5/4/00	3.3 w
X	6 Chip Ladder Fabrication 80% Complete	Silicon Tracker	7/12/00	3/14/00	16.8 w
X	M2-Calorimeter Preamp System Test Complete	Calorimeter Electronics	7/13/00	3/31/00	14.4 w
X	Low Mass Cables Available For Silicon South	Silicon Tracker	7/17/00	NA	0 w
X	Waveguide Production 50% Complete	Fiber Tracker	7/24/00	1/29/00	24.6 w
X	10 Digital Boards Available	Fiber Electronics	7/28/00	3/22/00	18 w
X	9 Chip Ladder Fabrication 80% Complete	Silicon Tracker	7/31/00	3/27/00	17.4 w
X	F Wedge Assemblies 80% Complete	Silicon Tracker	7/31/00	4/26/00	13.2 w
X	M2-Muon End Toroids Installed on Platform	Master	8/4/00	11/15/00	-14.2 w
X	Ten 8-chip Analog Boards Available	Fiber Electronics	8/8/00	4/19/00	15.4 w
X	M3-VLPC Cryo System Operational	VLPCs	8/18/00	6/12/00	9.6 w
X	B-Layer Octants Assembled	Muon Forward Tracker	8/24/00	4/18/00	18 w

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X	All MDT Octants Assembled	Muon Forward Tracker	8/24/00	7/14/00	5.8 w
X	Low Mass Cables Available for Silicon North	Silicon Tracker	9/4/00	NA	0 w
X	M3-VLPC Cassette Assembly 50% Complete	VLPCs	9/13/00	4/12/00	21.5 w
X	M2-First Silicon Tracker Barrel/Disk Module Complete	Silicon Tracker	9/14/00	1/24/00	33 w
X	SFE, SRC Fabrication Complete	Muon Electronics	9/21/00	2/3/00	32.5 w
X	South H-Disks Ready to Move to DAB	Silicon Tracker	10/13/00	7/3/00	14.4 w
X	MRC, MFC Production Complete	Muon Electronics	10/18/00	3/27/00	28.8 w
X	Preproduction MTCxx, MTFB, and MTCM Complete	Trigger	10/19/00	1/24/00	38 w
X	South Half-Cylinder Complete and Ready to Move to DAB	Silicon Tracker	10/25/00	8/1/00	12.2 w
X	M1-Begin Shield Wall Removal/Ready to Roll-in	Master	11/7/00	11/22/00	-2.2 w
X	M3-Waveguide Production Complete	Fiber Tracker	11/7/00	6/5/00	22 w
X	M3-Muon Level 1 Trigger Preproduction Testing Complete	Trigger	11/8/00	4/18/00	28.6 w
X	M3-All Silicon Tracker Barrels/Disks Complete	Silicon Tracker	11/22/00	8/25/00	12.6 w
	MBTs Received	Trigger	11/30/00	3/16/00	36 w
X	Daughterboard Vendor Production Complete	Calorimeter Electronics	12/7/00	6/16/00	24 w
X	North Half-Cylinder Complete and Ready to Move to DAB	Silicon Tracker	12/12/00	9/18/00	12 w
X	M1-Central Silicon Complete	Silicon Tracker	12/12/00	9/18/00	12 w
	Timing System Installed	Calorimeter Electronics	12/13/00	8/18/00	16 w
	M3- Cal Readout Available to L2	Trigger	12/13/00	2/11/00	42.6 w
	M3-Calorimeter CC, ECN Preamp Installation Complete	Calorimeter Electronics	12/19/00	3/31/00	36.4 w
	Drawers Ready	Intercryostat Detector	12/20/00	12/14/99	50.2 w
X	Muon Forward Tracker B-Layer Planes Installed	Muon Forward Tracker	12/22/00	6/15/00	26.2 w
X	All MDT Planes Installed	Muon Forward Tracker	12/22/00	8/4/00	19.2 w
	M3-L3 Operational (One Full Chain)	Trigger	1/2/01	6/1/00	29 w
	M2-Silicon Tracker Installed in Solenoid/Fiber Tracker	Silicon Tracker	1/4/01	9/25/00	13.6 w
	All Muon Forward Trigger Detector Planes Installed	Muon Forward Trigger	1/15/01	8/25/00	18.8 w
	BLS Motherboard Assembly Complete	Calorimeter Electronics	1/29/01	8/7/00	23.6 w
	Multichip Modules Received	Fiber Electronics	1/30/01	2/23/00	47 w
	Mixer Boards Ready	Fiber Electronics	1/31/01	6/22/00	30.2 w
	Production MTCxx, MTFB, and MTCM Complete	Trigger	2/2/01	6/27/00	30 w
	M2-Calorimeter BLS Assembly Complete	Calorimeter Electronics	2/5/01	9/26/00	17.6 w
	M3-VLPC Cassette Assembly Complete	VLPCs	2/12/01	8/22/00	23.4 w
	CFA Commissioning Complete	Muon Central	2/15/01	7/10/00	30.3 w
	PDT Commissioning Complete	Muon Central	2/20/01	6/9/00	34.8 w
	M1-Detector Rolled-in and Hooked Up	Master	2/22/01	2/2/01	2.8 w
	Global Installation Complete	Trigger	3/2/01	7/12/00	32 w
	L2 Cal Installation Complete	Trigger	3/2/01	8/21/00	26.4 w
	Alpha Cards Received	Trigger	3/30/01	5/15/00	44 w
	L2 Muon Installation Complete	Trigger	4/27/01	7/26/00	38 w
	L2 CTT Installation Complete	Trigger	4/27/01	8/9/00	36 w
	M3-Trigger Level 2 Commissioned	Trigger	6/4/01	9/21/00	35 w